



Facultade de Filoloxía

Grao en lingua e literatura inglesas

# **The Role of Learning Styles in SLA**

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Curso académico: 2015/2016



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## List of abbreviations

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- EFL: English as a foreign language
- EFT: *Embedded Figures Test*
- L1: First Language
- L2: Second language
- SLA: Second language acquisition
- TOELF: *Test of English as a Foreign Language*

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# 1. Introduction

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Since the second half of the twentieth century, the different factors which affect the acquisition of a second language have been widely studied (Ellis 1985; Brown 1987; Richards and Lockhart 1994; Torreblanca 2007; Ortega 2009). Among these factors, learning styles have witnessed a growing interest since they are believed to be important in successful language learning. L2 learners may find it tricky to decide which learning style is the most appropriate for them. Reid (1987) remarks the necessity of studying learning styles in relation to their application in the classroom environment, since he considers that not all of them are equally effective. As a result, teachers could help students to identify their preferences, which could generate advantages when learning a new language. However, learning styles are a complex area of research which has resulted in a wide range of classifications and inconclusive data (Kolb 1976; Knowles 1982; Reid 1987).

Learning styles have been studied in different areas; it nevertheless constitutes an unexplored area in the field of EFL. Recent research is often based on the study carried out by Reid (1987) which focuses on the perceptual learning styles classification. But there are virtually no studies on the preferred learning styles by Spanish learners regarding the acquisition of EFL. For this reason, this study is intended to determine Spanish EFL learners' preferred learning styles.

The purpose of this study is threefold. First of all it aims to investigate which learning styles are preferred by Spanish learners studying English as a L2. Second, it will show how learning styles interact with other individual factors such as age, gender, learning experience or proficiency level, among others. The results obtained will be compared with those given in previous studies (Reid 1987; Khmakhien 2012; Obralić and Akbarov 2012). Finally, I will try to establish the relationship between learning styles and their role in the successful learning of a second language.

In the present study, I will offer a review of the main theoretical aspects of learning styles and a description of the preferred learning styles by a sample of Spanish learners. The first section – the review of literature – is divided into three parts. The first one examines the individual factors – age, sex, aptitude, motivation, personality, learning strategies and learning styles – which have a certain influence in SLA. The

second part focuses entirely on learning styles providing the alternative definitions and classifications established by different authors such as Kolb (1976), Knowles (1982) and Reid (1987). Finally, the last part of this section deals with the interactions between individual factors such as age, gender, nationality or learning experience, among others, and perceptual learning style preferences established by Reid (1987). The next section presents the results of a survey carried out among a group of Spanish EFL learners. The first part will establish the main goals of the study by asking different research questions. The second part will explain the methodology adopted by describing the instrument used and how the data provided by respondents was manipulated for its analysis. Finally, the study will present the results by giving the analysis of the data in order to answer the different previously proposed research questions. Furthermore, this data will be compared with the information provided by previous studies. One final section will be devoted to the conclusions and will also present some proposals for future research in this field.

## **2. The review of literature**

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### **2.1. Individual factors**

Considerable research (Ellis 1985; Brown 1987; Richards and Lockhart 1994; Torreblanca 2007; Ortega 2009) has been devoted to the ways in which a person learns a L2 trying to establish the different variables that are involved in this complex process. Ortega (2009: 1) defines SLA research as ‘the scholarly field of inquiry that investigates the human capacity to learn languages other than the first<sup>1</sup>, during late childhood, adolescence or adulthood, and once the first language or languages have been acquired’. She also remarks on the importance of the different influences and contexts which come into play when learning a L2. Reid (1987: 15-16) points out that studies on SLA initially established analogies between learning a L1 and a L2. Consequently, he advocates the view that some teaching methods are based on how a person learns a L1. This idea may make sense at first but these comparisons are not clear enough regarding how adults learn a new language. A wide variety of factors such as cognition may affect this acquisition in a different way throughout the years so direct analogies cannot be established.

Some authors such as Ellis (1985), Brown (1987) and Ortega (2009) – on which this section is broadly based – devote special attention to approaches concerning learning and teaching of a L2 trying to determine the best methods that should be carried out by teachers, although they defend that learning a new language by just attending lessons in a classroom is not enough to become a successful learner. It is important that language teachers are aware of the importance of the different factors which characterise an individual because they are crucial to ensuring the success of L2 learning. Among these factors, age, sex, aptitude, motivation, learning styles and strategies and personality must be put together for understanding how SLA works.

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<sup>1</sup> In this regard, the term SLA will be used in a broad sense to refer to both the acquisition of a L2 and the acquisition of a foreign language, in other words, to both acquisition and learning.



### 2.1.1. Age

In relation to the age variable, several authors (Ellis 1985: 107; Brown 1987: 42; Singleton 2003: 3-18; Ortega 2009: 12-13) consider the notion of *critical period* as a period in which the capacity to acquire a new language takes place effortlessly due to brains' plasticity, mainly around puberty. This concept was introduced for the first time by Lenneberg (1967, quoted by Singleton 2003: 6) who claims that the *critical period* goes from 2 years old to puberty, beyond which the acquisition of L2s becomes more complicated, especially regarding the native-like accent (Singleton 2003: 4-5). But he did not provide evidence concerning these ideas related to SLA after puberty. Later on, other authors such as Krashen (1973, quoted by Singleton 2003: 4) would say that this period finishes in the early childhood.

Some researchers have tried to establish the most suitable age to learn a new language by comparing the acquisition of a L1 and a L2, and by comparing children's and adults' success too. Snow and Hoefnagel-Höhle (1978, quoted by Ellis 1985:105 and Ortega 2009: 16) had demonstrated that although adolescents from 12 to 15 years are the best learners, age seems to be determinant only when talking about morphology or syntax, due to the fact that pronunciation tests showed little differences among ages. In relation to this, Ellis (1985: 104-105) mentions the general belief that children are better learners than adults but he considers the evidence of older learners being more successful than children. Following Krashen et al. (1979, quoted by Ortega 2009:16), Ellis suggests that the number of years of exposure and the starting age are somehow determinant factors of proficiency. Brown (1987: 42) advocates the view that age is related not only to neurological and psychomotor considerations, but also to cognitive, affective and linguistic factors.

### 2.1.2. Sex

There are few works on how sex influences SLA but it seems to have a considerable influence on how an individual learns a language. Zhuanglin (1989, quoted by Zafar 2012: 640) postulates that females learn to speak earlier and that they are better learning L2s than men, in other words, that female students are favoured in language learning processes. Ehrman and Oxford (1995: 68) also claim that females show better attitudes

towards L2s and they use more conscious learning strategies than men, mainly metacognitive, affective and social strategies.

### 2.1.3. *Aptitude*

Carroll and Sapon's (1959, quoted by Ellis 1985: 112 and Ortega 2009: 149) successful *Modern Language Aptitude Test* is used by many authors in order to explain aptitude. Regarding this instrument, there are three main abilities related with aptitude: the phonetic coding ability (i.e. acceptance and encoding of new sounds), grammatical sensitivity (i.e. facility for new syntactical patterns), and memory capacity (i.e. capacity to memorize through repetition and association of sounds and meanings). A fourth ability called inductive ability (i.e. the ability to notice similarities and differences and create rules) is also mentioned as a discussed issue. Ellis (1985:113-14) finds it difficult to establish a clear connection between aptitude and successful language learning, since aptitude seems to be only useful in a traditional classroom environment related with a conscious study of rules, but not using a L2 in spontaneous situations outside of class.

### 2.1.4. *Motivation*

Brown (1987: 114-116) classifies this variable in relation to the individual's personality. He notes that people usually relates an appropriate motivation to success in learning a L2 despite the lack of research in this field. Brown (1987: 114) defines motivation as the impulse and ambition that lead the learner to achieve a goal – in this case L2 learning – and the effort to achieve it. He distinguishes different needs such as the need for exploration, manipulation, activity, stimulation, knowledge and ego development. Gardner and Lambert (1972; quoted by Ellis 1985: 117; Ortega 2009: 168) distinguish between motivation and attitude. The former is the global purpose and point of reference, while the latter refers to the effort to achieve that purpose. Both Ellis (1985: 117) and Brown (1987: 115) make reference to the distinction established by Gardner and Lambert between instrumental and integrative motivation. According to Brown (1987: 115), instrumental motivation means 'the motivation to acquire a language as means for attaining instrumental goals: furthering a career, reading technical material, translation'. Integrative motivation refers to the aim of integrating 'within the culture of the second language group'. Lambert's studies (1972) suggest that an integrative

motivation is important to succeed in L2 learning. Lukmani (1972; quoted by Brown 1987: 116) demonstrated from his own study that Indian students with a higher instrumental motivation did better on proficiency tests.

#### *2.1.5. Personality*

Personality can be described as ‘stable traits or qualities in a person, as more dynamic moods that are related to the cognitive processing of emotions, or even as predispositions that have been learned through social experience’ (Ortega 2009: 193). Brown (1987: 99) and Ellis (1985: 119) identify several personality factors which must be taken into account in SLA:

a) Extroversion and introversion. The former is defined by Brown (1987: 109) as ‘the extent to which a person has a deep-seated need to receive ego enhancement, self-esteem, and a sense of wholeness from other people’. On the other hand, Brown defines introversion as ‘the extent to which a person derives a sense of wholeness and fulfilment apart from a reflection of this self from other people’. Trying to demonstrate that extroverts are more proficient than introverts, Busch’s study (1982, quoted by Brown 1987: 110) study showed just the opposite results because of introverts’ better results in pronunciation. Dewaele and Furnham (1999, quoted by Ortega 2009: 197) advocate the view that extroverts have better short-term memory, which confers them little benefit in comparison with introverts’ cognitive capacity, but at the same time extroverts are more fluent when talking and they seem to be better in this sense.

b) Self-esteem. This personality trait consists in accepting yourself and believing in your own potential to achieve an activity such as SLA (Brown 1987: 101).

c) Inhibition. Brown (1987:103) explains that inhibition may be a negative factor, since people – from childhood to adulthood – create defences to protect their self-esteem from ideas or experiences that are not frequent in their environment. According to Ellis (1985:121), inhibition impedes those learners favoured with risk-taking from making progress in their L2. Both researchers mention Guiora et al.’s earlier study (1972a) which showed that learners who were administered a small dose of alcohol during a research for reducing the degree of inhibition got better results on pronunciation.

d) Risk-taking. It refers to those learners who take risk and make mistakes, although Beebe's study (1983; quoted by Brown 1987: 105) has demonstrated that moderate students are advantageous, since they take time to think and they make fewer mistakes.

e) Anxiety. Brown associates this personality trait with 'feelings of uneasiness, self-doubt, apprehension, or worry' (1987: 106). He remarks that the so called facilitative anxiety may be a positive factor because the learner is not completely relaxed when he/she wants to complete a task. On the other hand, Ortega (2009: 200) suggests that learners who have high levels of anxiety feel fear and tension when they are asked to speak in a L2 in the class and consequently they cannot speak or find correct answers.

Brown (1987:103) indicates that this wide range of factors cannot be framed within discernible limits. Furthermore, Ellis (1985: 121) states that there is no clear evidence that personality has essential effects on SLA arguing that it is only determinant regarding the acquisition of communicative competence.

#### *2.1.6. Learning strategies*

Learning strategies are defined by Brown (1987: 79) as 'specific methods of approaching a problem or task, models of operation for achieving a particular end, planned designs for controlling and manipulating certain information'. Brown additionally advocates two different sets of strategies: learning strategies, related with processing and storage information, and communication strategies, associated with SLA interacting with other people. Another definition can be Ortega's (2009: 208) who states that 'strategies are conscious mental and behavioural procedures that people engage in with the aim to gain control over their learning process'. O'Malley et al. (1985, quoted by Brown 1987: 92) distinguished three groups of learning strategies. Firstly, metacognitive strategies are involved with organization, planning and evaluation. Secondly, cognitive strategies are linked with learning tasks and they include strategies such as repetition, note taking or auditory representation. Finally, socio-affective strategies deal with interacting with others by cooperating or asking for explanations or examples among others.

Some authors (Riding and Rayner 1998; Zafar 2012) highlight the differences between styles and strategies. Riding and Ryner (1998:11) consider styles as reasonably fixed traits and tendencies in a person related with his/her physiological features, while strategies are methods developed over the years to deal with different tasks. Strategies are more flexible than styles and they vary within a person. Ehrman et al. (2003: 315) state that ‘styles are made manifest by learning strategies’. Moreover they describe a practical language strategy as one that fits perfectly the L2 task and the individual’s learning style preferences in a way that this individual can employ the strategy adequately.

#### *2.1.7. Learning styles*

A multitude of studies have paid attention to learning styles (Witkin and Goodenough 1985; Reid 1987; Riding and Rayner 1998) which can be defined as the individual preferences for processing and retaining new information for problem solving and learning (Ortega 2009: 2005). This extensive research leads to a wide range of classifications and ambiguities which will be discussed later in the following section.

### **2.2. Learning styles**

#### *2.2.1. Definition of learning styles*

In attempting to find the most appropriate definition for ‘learning styles’, it must be borne in mind that this term is frequently used interchangeably with ‘cognitive styles’ (Reid 1987: 90). Schmeck (1988: 102) makes an arbitrary distinction between cognitive styles and learning styles, the former being ‘a general, habitual mode of processing information’, and the later being ‘simply cognitive styles applied when individuals go about learning something’. The term ‘cognitive style’ would be better used when talking about preferred ways of brain activity such as acquisition and processing of information (Ehrman et al. 2003: 314). On the other hand, learning styles can be defined as ‘cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment’ (Keefe 1979, quoted by Reid 1987: 87). This means that cognitive styles are actually a specific branch within the major group of learning styles.

But there are many more possible definitions provided by different researchers. Ellis (1985: 114) and Riding and Rayner (1998: 8) see cognitive styles as the preferred ways in which people perceive, conceptualize, organize, and recall information'. Brown (1987: 84) makes reference to cognitive styles as variables that usually have a big impact when studying a L2. He relates styles to the way individuals think and also with their particular personality as a tool for acquiring a specific knowledge. Oxford et al. (1992: 440) explain that learning styles are 'the general approaches students use to learn a new subject or tackle a new problem'. Richards and Lockhart (1994: 59) describe cognitive styles as 'predispositions to particular ways of approaching learning' which are associated with each individual's personality varying depending on the learning situation. Kinsella (1995, quoted by Wong and Nunan 2011: 145) develops this idea by saying that a learning style is 'an individual's natural, habitual, and preferred way of absorbing, processing, and retaining new information and skills'. Finally, Ortega (2009: 205) defines learning styles similarly as the preferences people have when 'perceiving, remembering and using information for problem solving and for learning'. Ortega also considers learning styles as bipolar dimensions as most of the authors see them. Regarding all these definitions it can be concluded that despite the use of different terms for referring to learning styles, all these authors are referring to the same reality.

### *2.2.2. Language learning styles classifications*

The study of learning styles is tricky, since researchers define and categorize them in multiple ways (Renou 2010: 1). The main reason may be that studies on learning styles can make reference to different fields such as Medicine, industry or vocational training, but also languages. Consequently when we talk about learning styles it is important to bear in mind these multiple classifications established by different authors.

#### *2.2.2.1. Reid's classification*

Reid (1995) distinguishes mainly three groups of learning styles: cognitive learning styles, sensory learning styles, and personality learning styles. Researchers often focus their attention on one of these fields. In the following lines, these groups of learning styles will be described trying to make clear this extensive network which affects SLA.

To begin with, cognitive learning styles are usually employed to refer to learning styles in general but Kyriacou and al. (1996: 22) make a distinction between cognitive and learning style. Cognitive styles are related to features of learners' perceptual and cognitive processing, in other words, how learners process new information from the exterior. Riding and Rayner (1998: 7) define cognitive styles as 'the way in which the individual person thinks'. They are therefore related with the psychological field, since they include 'several aspects of 'differential psychology' associated with individual differences in the learner and the learning environment' (Jonassen and Grabowski 1993, quoted by Riding and Rayner 1998: 6). Witkin and Goodenough (1985: 24) point out that the first studies on cognitive styles go back to the *New Look*, in the second half of the nineteenth century, when a wide range of research on the relationship between perception and personality started.

Reid (1995) classifies cognitive learning styles into field-dependent; analytic and global; and reflective and impulsive. It is generally agreed that field dependence has been one of the most studied fields from the very beginning (Witkin & Goodenough 1985; Ellis 1985; Kyriacou and others 1996; Ortega 2009). Witkin and Goodenough (1985: 25-26) associate this wide research on field dependence with the breadth of interest in this dimension and consequently with its visible manifestations, such as the different effective instruments for its evaluation since its beginnings with Witkin's theory of psychological differentiation in 1962. Witkin and Goodenough (1985: 89) consider field dependence and independence as a bipolar entity and therefore as a neutral dimension, since each style has qualities which are adaptable to specific circumstances. No style is positive or negative in view of the fact that a field-independent individual is not able to see a whole picture but parts of it whilst a field-dependent can see the whole and not its constituents. Taking this into account, it is implied that a certain degree of both styles is necessary to be a good learner, but it is difficult to strike a balance. Despite all this, each person always tends to show greater preference or inclination for one of them. In order to measure this construct, Witkin (1985: 39) designed the *Embedded Figures Test*. The EFT consists in recognizing simple geometric forms which are hidden in a more complex figure. Those people with higher field independence achieve better scores since they find these simple figures in a shorter period of time.

Brown (1987: 85) clearly explains the distinction between a field-dependent and a field-independent learner. Field independence refers to the capacity of a learner to distinguish singular and particular items in a specific field. It implies the competence to separate the different elements that form a whole and also the ability to analyse all of them separately. On the other hand, a field-dependent style makes the individual focus on a whole or general view so that the specific items that define the whole field are not clearly seen. Brown (1987: 86-88) goes further and he links field dependence with L2 learning. According to him, field independence deals with the analysis of details and other kind of activities such as exercises or tests mainly in the class environment. Meanwhile, field dependence is argued to be more successful in relation to real communicative situations which imply face-to-face conversation. Previous studies by Guiora et al. (1972b, quoted by Brown 1987: 87) or by Brown himself propose the hypotheses about these two different styles for two different kinds of learning environments and at the same time, the necessity to be able to apply any of them in a particular situation. Brown also mentions some studies on field independence such as those by Naiman et al. (1978), Hansen and Stansfield (1981), or Roberts (1983) which seem to demonstrate to an extent that field-independent learners are more successful learning foreign languages, but they are not conclusive. Although these learning styles can be used by the same person indistinctly depending on the context and the requirements of the tasks, Brown (1987: 87) associates adults with field-independent learners and children with field-dependent learners, who are the advantaged ones. Ortega (2009: 206) also talks about Johnson, Prior and Artuso (2000), whose studies demonstrated that field independence is positive for learners regarding grammar and their self-monitoring. On the other hand, field dependence benefits those learners in the area of communicative abilities and expression, since they learn to communicate with others.

Another bipolar dimension included among cognitive learning styles is the analytic and global dimension. Contrary to what happens with field dependence, analytic and global learning styles are not thoroughly investigated among L2 learning researchers (Oxford 1989: 3). Field dependence seems to be closely related to the analytical and global dimensions. Schmeck (1988: 328) associates the analytic style with field independent learners. Analytic learners are characterised by critical and logical thinking. They usually analyse and remember details easily and they are also



capable of controlling their attention and feelings. These learners see differences more clearly than similarities. On the other hand, the global style is associated with field-independent learners. Their thinking is more intuitive and their feelings influence the decisions they make, since they are more impulsive. Instead of noticing details, they have a general view and global impressions and they are better than analytical learners detecting similarities.

Regarding L2 learning, Ehrman and Oxford (1995: 69) suggest that analytic learners are prone to analyse words, follow rules and establish comparisons because of their logical thinking, avoiding communicative situations. On the contrary, global learners prefer communicative experiences rather than analysis or authority-oriented learning. Oxford (1989: 3) establishes a relationship between analytical and global learners and the different functions of the brain hemispheres, as we will see below. According to her, left-brained learners tend to get in touch with language by analysing and making abstractions, which means that they are more involved with grammar. Right-brained learners deal with language following a global style also related with auditory and visual models, so they are better with intonation and rhythm. As it happens with field dependence and independence, an analytic style is not better than a global style and vice versa. Pask (1988: 12) develops this idea through what he called *versatile style*, implying that there is not a *better* learning style. A versatile learner is characterised by the 'absence of rigid, style-like consistency' (Schmeck 1988: 329) and by the combination of an analytic and a global style.

The third cognitive learning styles according to Reid's classification are the reflective and impulsive styles, related with the speed of processing. Brown (1987: 90) explains reflectivity as the feature which characterizes an individual who takes his time to make judgements or to answer a question, since reflective people need time to think. In contrast, an impulsive person does not take time to think and answers more quickly. An impulsive learner takes risks following his impulses, so impulsivity can be related with the global style at the same time. Ewing (1977; quoted by Brown 1987: 90-91) relates these styles to what he calls intuitive and systematic styles. The intuitive individual takes risks following his/her intuition and it is clearly related with the impulsive style, while the systematic individual considers a wide range of possibilities before answering.

In relation to SLA, an extensive investigation has not been carried out. Brown (1987: 91) states that according to some studies (Kagan 1965; Kagan, Pearson and Welch 1966; Doron 1973), reflectivity can favour the learner's reading skill and mistakes are less frequent if we compare it with impulsive thinkers. Impulsive learners seem to be quicker when they read but it does not imply that they understand what they read.

Returning to Reid's classification, the second variety of learning styles he establishes are sensory learning styles. At the same time, this group can be divided into perceptual learning styles and environmental learning styles. The former will be the one on which I will be focusing my study, so it will be given more attention than the other learning styles.

Perceptual learning styles deal with learners' sensory preferences. Renou (2010: 2) states that a 'perceptual learning style has to do with the physical environment in which we learn, and involves using our senses in order to perceive data'. In his *Perceptual Learning Style Preference Questionnaire*, Reid (1987) distinguishes six types of perceptual learning styles: visual, auditory, kinesthetic, tactile, individual learning and group learning.

First, visual learners are inclined to read. They prefer tranquil environments because reading requires concentration and for this reason they prefer to work alone. They remember better details through the visual system. These individuals need visual input such as pictures, slides, computers, videos, charts, magazines or written assignments. They need visual stimulation since lectures, conversations and oral directions without visual backup are confusing for them. Second, auditory learners do not need visual information because they learn mainly through the auditory system. They like all kinds of auditory resources such as DVDs, records, radio, television or music. They need oral directions when setting tasks and they learn listening to lectures. Third, kinesthetic learners need movement and physical involvement with learning situations. They learn primarily by real and active experiences, planning and carrying out objectives. Finally, tactile learners learn through the sense of touch and they like to manipulate real objects in the classroom. They learn better by working on experiments in a laboratory and building models, underlining as they read or taking notes when they listen in order to remember information. Additionally, Oxford et al. (1992: 445) classify these last two sensory preferences as *hands-on learning* since both types of learners

prefer physical objects, dramatic activities and role playing. Sitting in a class for a long time is not a positive thing for them and they need frequent breaks.

Furthermore, two social aspects of learning included among these perceptual styles are the individual versus group orientations. Individual learning means that the individual learns better when he or she works alone. On the other hand, group learning implies that the individual learns more effectively when they work with others, since they prefer group interaction and class work.

The environmental learning styles introduced by Reid are defined by Riding and Rayner (1998: 66) as the conditions and circumstances which an individual prefers for learning instead of focusing on psychological factors, and they can be divided into physical and sociological. The temperature, light, noise level and design of a certain place or time are factors included among physical learning styles. Sociological learning styles are related to groups' organization or the presence of authority figures taking into account their level.

To conclude with Reid's labelling, there are learning styles which are visibly connected with the individuals' personality called personality or affective learning styles. These learning styles draw attention to the learners' emotions, feelings and values. The *Myers-Briggs Type Indicator* (1962; quoted by Brown 1987: 111) establishes four different individual preferences organized in pairs: introversion/extroversion, sensing/intuition, thinking/feeling and judging/perceiving. The first variety has been already explained when talking about the individual factors involved in SLA. Extrovert learners are interested in interaction with others and their self-esteem increases through external events and relationships. Introverts prefer individual situations and limited relationships, in other words, they prefer to work in small groups. They do not need others to receive ego improvement. Secondly, sensing learners prefer to learn through concrete experience and observable facts instead of abstractions. Intuitive learners, on the contrary, like abstractions and speculation. They like imagination, fantasy and fiction, whilst sensing is more involved with real circumstances. Thirdly, a thinking style implies impersonal circumstances and analysis and criticism of facts. Individuals characterized by this style are objective and logical. Feeling-oriented learners, on the contrary, work with an affective and subjective way of processing. Finally, judgers are decided and fixed: they need a planned structure and closure and they are deadline-conscious. Perceiving learners are less structured and less

worried about deadlines since they are also flexible. They do not like closures but open options. Brown (1987:113) asserts that there is not any specific research joining these learning styles with SLA, but it can be deduced that each one of them is appropriate for a different task, which means that some learners are better than others when working on a particular task and vice versa.

Another style which can be included among personality learning styles is related to ambiguity. Tolerance of ambiguity is defined as the acceptance of ideas and thoughts that are new for the learner due to his/her own beliefs (Brown 1989: 89). Tolerant learners take risks and they like new experiences. Those people who are not tolerant of ambiguities refuse new ideologies that contradict their habitual thought. Intolerant learners are less flexible and they take fewer risks. In the case of SLA, Brown (1987: 90) suggests different ambiguities such as new words, new syntactical systems or rules that differ from the learner's L1. Moreover, a new language also implies a new cultural setting. As it happens with most of the learning styles mentioned above, a certain degree of both tolerance and intolerance is needed. By all means, tolerance is required to become a successful learner but the learner must not abuse it. On the other hand, high degrees of intolerance may be negative since it impedes the learner to acquire the new information and ideas which implies a new language.

Reid (1995) or Wong and Nunan (2011:145) also include left- and right-brain functioning along with personality learning styles. But brain's left and right hemispheres are also noticeably related with the field independent and field dependent cognitive styles, respectively. Brown (1987: 88-89) associates left-brain-dominant learners with logical and analytical thought. They learn in a planned and structured way. They prefer talking and writing rather than tactile or kinesthetic styles and they are analytic readers. Right-brained learners are characterized by intuition and they are fluid and spontaneous, for example with their emotions. They are more inclined to hands-on learning styles and they read synthetically. In the context of SLA research, Krashen, Seliger and Hartnett (1974, quoted by Brown 1987: 89) point out that left-brain functioning tends to cope better with the deductive style of teaching and right-brain functioning with inductive style. Ellis (1985: 272-273) further attaches the left hemisphere to the creative language involved in syntax and semantics and the processes which lead to speaking and writing. The right hemisphere is associated with the acquisition and use of formulaic speech.

#### 2.2.2.2. *Knowles' classification*

There are also other typologies worth mentioning apart from Reid's classification such as Knowles' learning styles. Knowles (1982, quoted by Richards and Lockhart 1994: 60) propose four kinds of learner. Firstly, those who are risk takers, inquisitive and spontaneous are characterized by a concrete learning style. Moreover, they prefer the visual and oral fields instead of reading. Secondly, independent learners who have a tendency towards learning on their own and like logical and systematic learning correspond to the analytical learning style, which can be associated with the analytical dimension discussed previously following Reids' cognitive styles. Analytic learners make efforts to achieve their goals; they are hardworking and susceptible to failure. Thirdly, a communicative learning style is associated with social experiences and activities; it involves interaction with others and group activities. Finally, the most responsible and dependent of some kind of authority such as a teacher are associated with an authority-oriented learning style. These learners need a guide and instructions and they like the traditional class environment. Furthermore, Richards and Lockhart (1994: 62) add that learners do not need to be classified into one of these groups, since this classification is just guiding. Belonging to one of these groups does not mean that the learner cannot present features of other groups.

#### 2.2.2.3. *Kolb's classification*

Kolb (1976, quoted by Riding and Rayner 1998: 54-55) measures how learners process information by distinguishing the act of perceiving (concrete and abstract thinking) and the act of processing (reflective or active way of processing information). This distinction leads to four different profiles of learning styles: *accommodator*, *diverger*, *converger* and *assimilator*. First of all, *accommodators* are active learners who perceive information concretely. They are risk takers and they like experimentation. Secondly, *divergers* are reflective learners and they also perceive information concretely. They need personal engagement with learning activities. *Thirdly*, *convergers* are also reflective learners and they perceive information abstractly, systematically and organized. Finally, *assimilators* perceive information abstractly and process it actively. In the domain of SLA, Kolb's (1981, quoted by Castro and Peck 2005: 403) study suggests that the diverger style is the predominant learning profile among foreign language graduate students.

### 2.2.3. *Factors affecting perceptual learning styles*

This section focuses its attention on the preferences each individual has concerning Reid's perceptual learning styles and how they vary depending on different factors such as age, sex, L2 level, time studying English, nationality and fields of study. In order to do this, it is important to consider some studies carried out by different researchers and academics, which are based on Reid's *Perceptual Learning Style Preference Questionnaire* (1987) which seems to be the preferred instrument when studying this area probably because of its simplicity. In his study, perceptual learning style preferences are classified into three groups depending on the means obtained for each style: *major*, *minor* and *negative* learning styles. The *major* learning styles are the preferred ones, followed by the *minor* learning styles and the *negative* learning styles, which are less used among individuals.

Regarding age, Reid (1987: 95) suggests that the older the individual, the higher the preference for visual, auditory, kinesthetic and tactile learning, but the results derived from his study – in which 1234 students of different nationalities from 39 universities in the United States participate – do not show important differences. Moreover, most studies usually focus on a limited age group of EFL learners so it seems difficult to see the differences among all age groups.

More clear differences have been observed by comparing men and women, but these were not conclusive. Reid (1987: 94) determines that men prefer visual and tactile learning styles to a greater extent than women, as Karthigeyan and Nirmala's study also confirm (2013: 138). Wehrwein, Lujan and DiCarlo's piece of research on Physiology students' preferences (2007: 155) shows that male usually combine different learning styles when learning, whilst most females prefer unimodal learning, mainly kinesthetic processes. As it was mentioned in the section on individual factors concerning sex, it is suggested that women are favoured in language learning processes. Khmakhien's (2012) study with 262 Thai university students of EFL showed that the auditory style is the preferred style by both male and female; therefore, they like to learn by hearing and talking. Female students seem to be more kinesthetic than males but regarding the other styles, big disparities cannot be observed. The same happens with Obralić and Akbarov's research (2012: 36), which did not find important differences between sexes, concluding that respondents from the English Language School at International University of Sarajevo are visually oriented and prefer to work individually.

Nationality is probably the factor which shows more contrasted preferences in relation to language learning styles. To begin with, Reid's findings (1987: 96) show that most nationalities prefer kinesthetic learning as a major learning style, Arabic, Spanish, Chinese and Korean students being more kinesthetic than the rest, and especially more kinesthetic than Japanese students. Regarding the tactile style, both native speakers of English and Japanese learners are not good tactile learners and there is an obvious variation in relation to Arabic, Chinese or Korean learners who have this learning style as a major one. Similarly, Arabic and Chinese people also excel in the auditory learning style, Japanese learners being the least auditory inclined. Korean learners, followed by Arabic and Chinese people, are clearly more visually oriented than Japanese and American students. Taking all this into account, it can be observed that Arabic, Chinese and Korean respondents are multimodal learners having these four styles as major learning styles. However, Spanish are bimodal learners since they just show a preference for kinesthetic and tactile styles over the rest, in the same way American learners prefer only kinesthetic and auditory styles. On the contrary, Japanese learners have no preference for any of these styles, all of them being minor styles. Finally, group learning is regarded as the most negative style by all students, except by Arabic and Malay students who consider it as minor learning style. Except Malay learners, the rest of the students – Arabic, Spanish, Japanese, Chinese, Korean, Thai, Indonesian and English – prefer individual learning. Nevertheless, it is a minor learning style – the learner can function well in an individual way but to a lesser extent than in major learning styles.

Reid (1987: 95) also considers how long students have been studying English as a variable in a context where these students are learning English as a foreign language in the United States. The conclusion is that those students who have been studying English there for more than three years prefer the auditory style. They do not show the same interest in kinesthetic, visual or group learning and they are less tactile. Besides, Khmakhien's study (2012: 69) shows that those learners who have been studying English for less than twelve years in Thailand tend to cope with a wider range of learning styles. These students together with those studying English for more than twelve years have the auditory style as a major learning style, followed by the kinesthetic style. The negative learning style is in both cases the individual learning. The main difference can be appreciated regarding tactile learning, since learners with

more than twelve years of experience are not as tactile as the beginners. Regarding this last point, a connection can be established between both Reid and Khamahien's studies which link tactile learners to the early years learning English.

Furthermore, there is not substantial research on the relationship between proficiency level and learning styles. In this field, Reid (1987: 95) only refers to the fact that those students with higher TOEFL seem to have more similarities with English native speakers. Additionally, he associates graduates with visual and tactile learning and undergraduates with the auditory style. But there is no guarantee that all graduates have a higher level of English than undergraduates.

Finally, field of study is another significant factor that has been studied. Reid (1987: 94) considered different fields of study: Engineering, Medicine, Business, Computer science, Hard sciences and Humanities. He found that the major styles among all of them were kinesthetic and tactile styles, which seems to contradict Fazarro's conclusion (2004) that students belonging to different fields of study present different preferences, since the way of approaching the diverse tasks may be different. Among them, Computer science students are the only ones who prefer tactile learning over kinesthetic learning. Students in Humanities are the least visual oriented individuals. Regarding individual and group learning, all of them prefer individual learning, but Engineering and Computer science students have more group sense than the rest. Khmakhien (2012: 69) also analyzed students learning English from different fields: Agriculture, Liberal arts, Engineering, Education and Sport sciences. As it happens with Reid's results, this study did not show differences among different fields of study. In this case auditory learning is the preferred one and the individuals in the survey show a preference for group learning instead of individual.

Taking a look at these studies, it can be concluded that it is difficult to find an agreement about which perceptual learning styles are the preferred ones. Results are inconclusive and they vary depending not only on those factors mentioned above but also on the different environment where these studies are carried out. Furthermore, empirical research on perceptual learning style preferences of learners studying English as a L2 is scarce, and in the case of Spanish learners, virtually non-existent. In the light of the discussion above, this study is designed to provide data about the preferences that Spanish learners have regarding SLA following Reid's Perceptual Learning Style Preference questionnaire.



### 3. The study

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#### 3.1. Goals

The main objective of this study is to determine which learning styles are the ones preferred by Spanish EFL learners and how these styles may be affected by individual factors such as sex, age or the time they have been studying English. Moreover, it will show whether there is any interaction among the different perceptual learning styles, since they are not mutually exclusive. The following research questions will be addressed in this study:

Research question 1: Which perceptual learning styles are preferred by Spanish EFL learners?

Research question 2: Are there any differences between males and females regarding the different perceptual learning styles?

Research question 3: Is there any interaction between age and the different perceptual learning styles?

Research question 4: Is there any interaction between the learner's previous experience with the L2 and the perceptual learning styles?

Research question 5: How does the variable class/grade interact with the different perceptual learning styles?

Research question 6: Do the proficiency levels (expressed as a mark) in each grade have any effects on the different perceptual learning styles? Are there any relationships between learning styles and successful learning?

Research question 7: Is there any interaction among the different perceptual learning styles? Are some of them somehow related?

#### 3.2. Methodology

The survey, based on Reid's *Perceptual Learning Style Preference Questionnaire* (1987), was administered to 100 learners from four different groups which belong to

different grades (see Table 1). The first group consists of 50 high school students aged between 11 and 16 years randomly selected from four different secondary school grades. The second one is composed of another 50 students studying English Language and Literature at the University of Santiago de Compostela, whose age ranges from 18 to 22 years. Additionally, among them there are some exceptional cases, for example a female aged 62. Most of them are Spanish, therefore their native language is Spanish as well. There are also some students from other nationalities (Chinese, Moroccan, Polish, Portuguese and Romanian) but this variable will not be used in this study due to the small number of foreign learners among respondents, as shown in Table 2.

All these learners have been studying English as a L2 for at least more than 6 years. For practical purposes this variable will be divided in two groups: learners studying English for less than 13 years and learners studying English for more than 13 years. Table 2 also shows the learners' proficiency level in English (expressed as a mark). However, it should be noted that marks were obtained in different ways depending on the class/grade, so it is not possible to carry inter-group comparisons using this criterion.

**Table 1. Overview of the variables grade and age**

Grade		Age	N
Secondary School	1st/2nd year	12-16	25
	3rd/4th year	14-16	25
University	1st year	18-31	25
	2nd year	21-62	25

**Table 2. Overview of the variables sex, nationality, proficiency level and L2 experience**

Sex	N	Nationality	N	Proficiency level	N	L2 experience	N
Female	58	Spanish	91	without data	4	6 years	2
Male	42	Chinese	4	0-2,9	3	9 years	3
		Moroccan	2	3-4,9	14	10 years	23
		Romanian	2	5-6,9	30	11 years	13
		Polish	1	7-8,9	36	12 years	17
				9-10	13	13 years	7
						14 years	8
						15 years	9
						16 years	5
						17 years	1
						18 years	5
						19 years	3
						20 years	2
						23 years	1
						50 years	1

This study is based on the already mentioned *Perceptual Learning Style Preference Questionnaire* (Reid 1987) (see Appendix). This self-reporting questionnaire consists of 30 statements dealing with the different perceptual learning styles. There are 5 items per learning style: auditory (items 1, 7, 9, 17 and 20), visual (items 6, 10, 12, 24 and 29), kinesthetic (2, 8, 15, 19 and 26), tactile (items 11, 14, 16, 22 and 25), group (items 3, 4, 5, 21 and 23) and individual (items 13, 18, 27, 28 and 30). Furthermore, at the beginning of the survey, respondents had to give some personal information such as their sex, age, nationality, class, native language, previous L2 experience and proficiency level (expressed as a mark) which served as variables in order to establish the interactions and correlations with the different learning styles.

The questionnaires were distributed to the individuals by the researcher during classes with lecturers' permission. The students filled out the form following the guidelines indicated in the questionnaire. It was made clear to the subjects that all the items in the questionnaire made reference to how they learn English as a L2. The data about the individual factors and the answers to the different items were stored on a database (SPSS) for a subsequent statistical analysis. This software also allowed me to carry out different statistical tests in order to show the significant interactions and correlations among the different learning styles and the individual factors.

Furthermore, the mean of the different items contributing to the description of each learning style was calculated. Then, the different means obtained were classified into three categories depending on the individuals' preference following Reid's procedure. Therefore, a given learning style was considered a *major* learning style if the mean was between 5.00 and 3.34; *minor* for means between 3.33 and 1.67; and *negative* for means of 1.66 or less. A major learning style means that individuals have a strong preference for this learning style, whilst a negative learning style is barely used among these individuals.

### 3.3. Results

#### 3.3.1. General results: major and minor learning styles

First of all, the means of the different perceptual learning styles were calculated to find out which styles are the preferred ones among respondents. In the following table, learning styles are ranked in order of preference.

**Table 3. Spanish learners' perceptual learning style preferences**

<b>Learning style</b>	<b>Means</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
1. Kinesthetic	3.72	0.76	1.40	5.00
2. Auditory	3.68	0.57	2.40	5.00
3. Individual	3.53	0.92	1.00	5.00
4. Tactile	3.44	0.77	1.40	5.00
5. Visual	3.28	0.61	1.00	4.60
6. Group	3.07	0.97	1.00	5.00
	<b>3.45</b>	<b>0.76</b>	<b>1.36</b>	<b>4.93</b>

Table 3 shows that the subjects of the survey have a preference for the kinesthetic learning style ( $\bar{X}=3.72$ ) and auditory learning ( $\bar{X}=3.68$ ), followed by individual learning ( $\bar{X}=3.53$ ) and tactile learning ( $\bar{X}=3.44$ ). All of them can be considered major learning styles ( $> 3.33$ ). On the other hand, the visual learning style ( $\bar{X}=3.28$ ) and the group learning style ( $\bar{X}=3.07$ ) are minor learning styles since their means are between 3.33 and 1.67. Taking this into account, it can be concluded that Spanish respondents prefer to learn by experience, being physically involved with the learning situation, and also by listening. Moreover, most of them prefer to study alone rather than work in groups with others.

Some differences can be seen by comparing these results with those of Khmakhien (2012: 67). Khmakhien's research also shows that auditory and kinesthetic learning styles ( $\bar{X}=3.87$ ;  $\bar{X}=3.72$ ) are the preferred ones, but in this case Thai learners have a greater preference for the auditory style. The biggest difference lies in the individual and group learning styles, since Thai individuals, unlike the Spanish, prefer to work in groups ( $\bar{X}=3.66$ ), while the individual learning style becomes a minor learning style ( $\bar{X}=3.20$ ).

### 3.3.2. Interaction between sex and learning style

**Table 4.** Spanish learners' learning styles and sex<sup>2</sup>

	Learning style					
	Auditory	Visual	Kinesthetic	Tactile	Group	Individual
<b>Female</b>	3.75	3.32	3.75	3.58*	3.28*	3.36
<b>Male</b>	3.57	3.22	3.66	3.23	2.78	3.77*

Table 4 compares the learning style preferences of males and females. Both males and females show a preference for auditory and kinesthetic styles. These learners are less visually oriented, visual learning being a minor style. This table shows the females' preference for the tactile learning style as a major learning style; on the contrary, it is a minor learning style for males. In order to test whether these differences were statistically significant, i.e. whether similar results could have been obtained with a different but similar sample of subjects, I used the Independent samples T-test. It shows that the difference between both groups regarding the tactile learning style is statistically significant ( $t=2.29$ ;  $p=.02$ ).

As for the individual and group learning styles, both sexes, but especially males, tend to learn more by working individually. The group learning style is therefore a minor learning style for both males and females, although the latter are more inclined towards learning with others. The T-test shows that there are statistically significant differences between sexes regarding both individual ( $t=2.24$ ;  $p=.02$ ) and group ( $t=2.62$ ;  $p=.01$ ) learning styles.

The results obtained in Table 4 contradict Reid's (1987: 94) statement according to which males are more visually and tactile oriented than females. However, this analysis agrees with Wehrwein, Lujan and DiCarlo (2007: 155) about the females' preference for the kinesthetic learning style. Similarly, it closely coincides with Khmakhien (2012: 68), who suggests that Thai learners have the auditory style as a major style along with the kinesthetic learning style, the latter being mostly preferred by females. On the contrary, Thai learners prefer to work in groups while Spanish learners prefer the individual learning style, as the respondents in Obralić and Akbarov's research (2012: 36) do. But it is important to notice that the differences between sexes

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<sup>2</sup> statistically significant differences are marked with an asterisk\*

regarding individual and group learning styles are only statistically significant in the present study.

### 3.3.3. Interaction between age and learning style

As already mentioned, studies on learning styles do not usually pay attention to the age variable since the majority of them pay attention only to a limited age, which is not useful enough to observe significant differences. The following table takes into account learners under and over the age of 18 trying to establish the differences and similarities between these groups.

**Table 5. Spanish learners' learning styles and age<sup>3</sup>**

	<b>Learning style</b>					
	<b>Auditory</b>	<b>Visual</b>	<b>Kinesthetic</b>	<b>Tactile</b>	<b>Group</b>	<b>Individual</b>
<b>&lt; 18</b>	3.76	3.32	3.94*	3.47	3.34*	3.49
<b>&gt; 18</b>	3.59	3.24	3.5	3.40	2.81	3.58

Those learners aged under 18 have a strong preference for the kinesthetic learning style, followed by the auditory learning style. Learners older than 18 also prefer these styles as major learning styles, but they are more auditory oriented than kinesthetic. Nevertheless, the T-test just shows statistically significant differences between these age groups regarding the kinesthetic learning style ( $t=2.98$ ;  $p=.004$ ). Continuing with major learning styles, all of them also show a preference for tactile learning, while the visual learning style is a minor one.

Both learners under and over 18 prefer to learn alone instead of working in groups. However, both individual and group learning styles are major styles, with the exception of the group learning style which is a minor one for older learners. The T-test reveals that the difference between the two groups regarding the group learning style is statistically significant ( $t=2.81$ ;  $p=.006$ ).

Once again, these results do not seem to support Reid's observation (1987:95) that the older the person, the higher the auditory, visual, kinesthetic and tactile orientation. Table 5 indicates just the opposite showing lower means in these styles for learners older than 18.

<sup>3</sup> statistically significant differences are marked with an asterisk\*

### 3.3.4. Interaction between previous experience with the L2 (expressed in years) and learning styles

It is also interesting to see if leaning style preferences vary regarding the length of time that individuals have been studying English as a L2. In order to do this, respondents were classified into two different groups: those learners who had been studying English for less than 13 years and those studying English for more than 13 years.

**Table 6. Spanish learners' learning styles and L2 experience<sup>4</sup>**

	Learning style				Group	Individual
	Auditory	Visual	Kinesthetic	Tactile		
< 13	3.76	3.33	3.96*	3.55	3.38*	3.46
> 13	3.56	3.21	3.38	3.28	2.64	3.62

The kinesthetic and auditory learning styles are once again the major learning styles for both groups. But they differ in that those learners studying English for more than 13 years are more auditory oriented than kinesthetic, while those students with a lower L2 learning experience prefer the kinesthetic learning style. The T-test shows that there are only statistically significant differences between these two groups regarding the kinesthetic learning style ( $t=3.77$ ;  $p=.00$ ). Table 6 also indicates that the tactile learning style is a major one for learners with less experience, but for the more experienced ones it is a minor learning style. The visual learning style is a minor learning style for both groups.

Moreover, both groups show a preference for the individual learning style, although the group learning style is a major one too for those who have studied English for less than 13 years. The T-test shows that this difference is statistically significant regarding group learning ( $t=4.03$ ;  $p=.00$ ), but it is not significant in the case of the individual learning style ( $t=-0.84$ ;  $p=.39$ ).

There is a point of agreement between this study and that of Reid (1987: 95), since the latter affirms that individuals who have been studying English for more than three years are more auditory oriented. In some way, the same happens with the respondents in this survey who seem to be more auditory oriented the longer they have been studying English as a L2. Both studies also share the view that individuals studying English over a long period of time are less tactile than the beginners, who

<sup>4</sup> statistically significant differences are marked with an asterisk\*

show more preference for tactile learning. Other points of agreement are also found regarding Khmakhien's study (2012: 69). First of all, both Thai and Spanish respondents studying English for less than 13 years are multimodal learners – table 6 indicates that all of the perceptual learning styles are major styles. Moreover, both studies reveal that the major styles for more experienced learners are the auditory learning style followed by the kinesthetic learning style. The main difference lies in the individual and group learning styles, since Thai learners like to learn in groups and Spanish learners prefer individual study.

### *3.3.5. Interaction between grade/class and learning styles*

As is shown in Table 1, this survey examines subjects belonging to different grades or classes and this variable is also related to the age variable. This research question focuses on how the variable grade interacts with the different learning styles. In order to see these interactions the One-way ANOVA test has been used instead of the T-test, since we were comparing four different groups. It indicates that the variable grade interacts significantly only with some of the styles: the kinesthetic ( $F=6.396$ ;  $p=.001$ ) and the group ( $F=7.996$ ;  $p=.000$ ) styles. This means that the preference for these two styles is affected by the year the subject is in.

The Scheffé post-hoc test was also used to find out between which groups these differences are statistically significant. Thus, regarding the kinesthetic style, there are significant differences between fourth-year university students and the other three groups i.e. first-year university students ( $p=.029$ ); third-year and fourth-year high school students ( $p=.008$ ); and first-year and second-year high school students ( $p=.003$ ). The same happens with the group style, in which fourth-year university students significantly differ from first-year university students ( $p=.005$ ); third-year and fourth-year high school students ( $p=.000$ ); and first-year and second-year high school students ( $p=.013$ ).

To sum up, the most important differences are found among the fourth year of University and the rest of grades regarding the kinesthetic and group learning styles. Going back to Table 5, it can be seen that both the age factor and the grade factor show significant differences regarding the same learning styles. Therefore, these individual factors are clearly linked.



### *3.3.6. Interaction between proficiency level and learning style*

In order to analyze the effects of the proficiency level variable, we used Pearson's correlation. This statistical test tries to find "the degree to which two sets of numbers are related in one way or another" (Brown and Rodgers 2002: 158) without assuming the existence of a causality relationship between the variables involved, in this case between proficiency level (expressed as a mark) and the preference for a given perceptual learning style (expressed as a mean). A positive correlation between two variables indicates that the higher the mark, the higher the style mean; and a negative correlation shows that the higher the mark, the lower the mean. Furthermore, the closer to  $\pm 1$ , the stronger the correlation.

However, the relation between proficiency level and learning styles had to be established separately for each group, since the proficiency level is expressed as a mark and it was obtained in different ways depending on the group (respondents provided their most recent marks in English obtained in their respective grades).

Regarding fourth-year university students, Pearson's correlation test indicates that there is a negative correlation between proficiency level and the preference for an auditory style (i.e. the higher the mark, the lower the style mean), but this correlation is not big enough to be statistically significant ( $r = -.323$ ;  $p = .115$ ). This correlation is also negative between proficiency level and the visual ( $r = -.123$ ;  $p = .558$ ), kinesthetic ( $r = -.192$ ;  $p = .358$ ) and group ( $r = -.077$ ;  $p = .714$ ) learning styles. Otherwise, the correlation is positive in the case of the tactile learning style ( $r = .199$ ;  $p = .340$ ) and the individual learning style ( $r = .386$ ;  $p = .057$ ). Thus, fourth-year university students with higher marks are oriented towards tactile and individual learning.

First-year university students show a positive correlation between proficiency level and the kinesthetic learning style, but it is not statistically significant ( $r = .030$ ;  $p = .896$ ). Regarding the other learning styles, all the correlations are negative but the only statistically significant is the correlation between proficiency level and the tactile learning style ( $r = -.433$ ;  $p = .050$ ). It means that the higher the mark, the lowest the tactile style mean.

As for third-year and fourth-year high school students, all the correlations are positive and non-significant with the exception of the correlation between proficiency

level and the group learning style which is negative but non-significant too ( $r=-.119$ ;  $p=.570$ )

Finally, first-year and second-year high school students show a negative correlation which is not statistically significant between proficiency level and the kinesthetic ( $r=-.172$ ;  $p=.411$ ) and group ( $r=-.155$ ;  $p=.458$ ) learning styles. The correlation is positive and non-significant in the case of the auditory, visual, tactile and individual learning styles.

Taking into account that there is only one statistically significant correlation it can be concluded that proficiency level and learning styles are not clearly related. Therefore, this study seems to suggest that learning styles do not determine successful learning and further research should be conducted using a greater sample to verify the results of this study.

### *3.3.7. Interaction between different learning styles*

Since most learning styles do not seem to be mutually exclusive, this last part shows their correlations to see if learners with a specific learning style also show a tendency towards another learning style or not.

The correlations of the auditory learning style with the kinesthetic learning style and the tactile learning style are positive (i.e. subjects showing a high preference for the auditory style also tend to show a high preference for kinesthetic and tactile styles) and these correlations are statistically significant ( $r=.415$ ;  $p=.000$ ; and  $r=.259$ ;  $p=.009$  respectively). Similarly, there is a positive correlation between the visual learning style and the individual learning style which is statistically significant ( $r=.259$ ;  $p=.009$ ). The same happens with the correlation between the kinesthetic learning style and the tactile and group learning styles ( $r=.564$ ;  $p=.000$ ; and  $r=.400$ ;  $p=.000$  respectively) and also between tactile and group learning styles ( $r=.299$ ;  $p=.003$ ), since the tactile learning style may include tasks which may require the interaction with others in a laboratory. Regarding the correlation between the tactile learning style and the individual learning style, the correlation is negative, although it is not significant ( $r=-.051$ ;  $p=.615$ ).

On the other hand, there is only a highly significant negative correlation between the group learning style and the individual learning style ( $r=-.600$ ;  $p=.000$ ), i.e. the

higher the group mean, the lower the individual mean. It makes sense since those learners which prefer to study in group do not tend to like working alone.

There are also other negative correlations between the auditory and visual learning styles ( $r=-.182$ ;  $p=.070$ ) and the visual and group learning styles ( $r=-.047$ ;  $p=.644$ ) but these are not significant, although they may make sense too.

## 4. Conclusions and suggestions for further research

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The current study demonstrates that Spanish EFL learners have a clear preference for the kinesthetic and auditory learning styles. In other words, they learn better by practical experience and by listening and conversing with others. Furthermore, Spanish learners prefer individual work rather than working with others. Regarding the individual factors affecting learning style preferences, significant interactions are shown between the sex factor and the tactile, group and individual learning styles, which is something new taking into account that previous research did not find significant results.

As for the age factor, previous research has shown that the tendency towards the auditory, visual, kinesthetic and tactile learning styles is higher in relation to older learners (Reid 1987: 95). However, the present study shows higher means for learners aged under 18. Significant differences between the two age groups under consideration (i.e. below and over 18) are found regarding the kinesthetic and group learning styles, whose means are higher for younger learners. The same statistically significant differences exist in relation to previous experience with the L2. Other similarities can be seen between these two variables, such as the preference for tactile learning by younger learners. It may make sense, since the kinesthetic and tactile learning styles are related with plays and activities which imply physical involvement and this kind of experiences are in large measure attributed to younger learners. Nevertheless, a clear connection cannot be established between the age variable and the L2 experience variable, since the fact of being a beginner does not necessarily imply that you are a young person. Finally, once again the means for the individual learning style are higher than those for group learning.

Furthermore, there are significant differences between the grade/class variable and the kinesthetic and group learning styles and these differences are shown among four-year university students and the rest of grades. In this case the connection between the age variable and the grade variable are clearer since age is in most cases proportional to grade.

Although this study had the purpose of determining the relationships between learning styles and successful learning, this objective could not be completely fulfilled since successful learning is connected with proficiency level. In the present study

learners belonging to different classes were not assessed using the same evaluation instruments and the relationships were established separately for each grade; therefore, the results are not as conclusive as desired. There is only one positive and statistically significant correlation between the tactile learning style and proficiency level regarding first-year university students. Taking this into account, our study seems to suggest that successful learning is not determined by learning styles.

More concrete results were obtained when trying to determine the relationships among the different learning styles. Learners with higher group means present lower individual means and vice versa. On the other hand, learners who have a preference for the kinesthetic and tactile styles show higher group means. There are also significant positive correlations between the kinesthetic style and the auditory and tactile learning.

By comparing these results with previous studies, it can be concluded that language learning styles vary depending on the learners' contexts, therefore they can be modified. In this sense, learning styles preferences seem to be adaptable and a higher importance should be given to teaching methods. The teacher should be able to help students to identify the learning style which best suits their needs.

The results of this study should be interpreted with caution since it has several limitations that should be taken into account. To begin with, a clear relation cannot be established between age and L2 experience. Future research should undertake a survey with beginners and advanced learners of different ages in order to have a wide range of respondents which enables us to see if there are relations or not between these two variables. Regarding proficiency level, all learners should be assessed using the same instrument for determining their level and for finding out if there is a significant correlation between learning style and successful learning. Furthermore, empirical exploration of other variables such as nationality and, especially, fields of study should be conducted. As for nationality, the present study was limited due to the small number of respondents from different origins – the majority having Spanish as a L1 – but it would be interesting to compare Spanish learners with foreigners studying English in Spain. Fields of study were not taken into account here, since all the respondents' field is English learning. In addition, it would be interesting to conduct further studies on language learning styles since recent research usually focuses on Reid's *Perceptual Learning Style Preference Questionnaire* which only pays attention to perceptual learning styles.

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## Appendix

### PERCEPTUAL LEARNING STYLE PREFERENCE QUESTIONNAIRE

☐ Hombre      ☐ Mujer

Edad \_\_\_\_\_

Nacionalidad \_\_\_\_\_

Lengua(s) nativa(s) \_\_\_\_\_

¿Cuántos años has estudiado inglés? \_\_\_\_\_

Nota numérica de la evaluación/cuatrimestre anterior en inglés \_\_\_\_\_

Este cuestionario anónimo ha sido diseñado para ayudar a identificar el mejor modo en el que aprendes inglés o el método que tú prefieres a la hora de aprenderlo.

Lee cada enunciado y responde de la manera más adecuada a tu estudio del inglés. Todos los enunciados aparecerán traducidos al castellano junto a su original en inglés. Marca, con bolígrafo, exclusivamente una casilla en cada uno de los enunciados según tu nivel de conformidad. Intenta hacerlo con rapidez y sin pensarlo demasiado. Intenta no cambiar tus respuestas una vez que ya estén marcadas.

(5) Totalmente de acuerdo Strongly agree

(4) De acuerdo Agree

(3) Indeciso Undecided

(2) Desacuerdo Disagree

(1) Totalmente en desacuerdo Strongly disagree

5	4	3	2	1	
					1. Cuando el profesor da las instrucciones, entiendo mejor. When the teacher tells me the instructions, I understand better.
					2. Prefiero aprender haciendo cosas en clase. I prefer to learn by doing something in class.
					3. Avanzo más cuando trabajo con otros. I get more work done when I work with others.
					4. Aprendo más cuando estudio en grupo. I learn more when I study with a group.
					5. En clase, aprendo mejor cuando trabajo con otros. In class, I learn best when I work with others.
					6. Aprendo mejor leyendo lo que el profesor escribe en la pizarra. I learn better by reading what the teacher writes on the chalkboard.
					7. Aprendo mejor cuando alguien me dice cómo hacer algo en clase. When someone tells me how to do something in class, I learn it better.
					8. Cuando hago cosas en clase aprendo mejor. When I do things in class, I learn better.
					9. Recuerdo mejor lo que escucho en clase que lo que leo. I remember things I have heard in class better than things I have read.
					10. Cuando leo instrucciones las recuerdo mejor. When I read instructions, I remember them better.
					11. Aprendo más cuando puedo hacer un modelo de algo. I learn more when I can make a model of something.
					12. Entiendo mejor cuando leo instrucciones. I understand better when I read instructions.
					13. Recuerdo las cosas mejor cuando estudio solo. When I study alone, I remember things better.
					14. Aprendo más cuando desarrollo algo para un trabajo de clase. I learn more when I make something for a class project.
					15. Disfruto aprendiendo en clase haciendo experimentos. I enjoy learning in class by doing experiments.
					16. Aprendo mejor cuando hago dibujos de lo que voy estudiando. I learn better when I make drawings as I study.

					17. Aprendo mejor en clase si el profesor imparte una lección. I learn better in class when the teacher gives a lecture.
					18. Cuando trabajo solo, aprendo mejor. When I work alone, I learn better.
					19. Entiendo mejor las cosas en clase cuando participo en actividades de dramatización (improvisadas). I understand things better in class when I participate in role-playing.
					20. Aprendo mejor en clase cuando escucho a alguien. I learn better in class when I listen to someone.
					21. Disfruto trabajando en una tarea con 2 o 3 compañeros de clase. I enjoy working on an assignment with two or three classmates.
					22. Cuando construyo algo, recuerdo mejor lo que aprendí. When I build something, I remember what I have learned better.
					23. Prefiero estudiar con otras personas. I prefer to study with others.
					24. Aprendo mejor cuando leo que cuando escucho a alguien. I learn better by reading than by listening to someone.
					25. Disfruto haciendo algo para un trabajo de clase. I enjoy making something for a class project.
					26. Aprendo mejor en clase si participo en actividades afines al tema tratado. I learn best in class when I can participate in related activities.
					27. En clase, trabajo mejor cuando lo hago solo. In class, I work better when I work alone.
					28. Prefiero hacer trabajos de forma individual. I prefer working on projects by myself.
					29. Aprendo más leyendo libros de texto que escuchando exposiciones orales. I learn more by reading textbooks than by listening to lectures.
					30. Prefiero trabajar yo solo. I prefer to work by myself.